

# Medical Informatics at USMEPCOM

A platform for prospective  
longitudinal medical  
accession research studies

# A-Z Team

- Late 02-early 03
- USMEPCOM customers (recruiting, accession) + USMEPCOM personnel
- Examined all MEPS business practices including aptitude testing, operations, medical
- Medical informatics proposal outgrowth of the team's effort

# Medical Informatics Proposal

- To build a computerized MEPS medical knowledge base and MEPS electronic medical record
- To provide dedicated medical informatics personnel at USMEPCOM for customer support and knowledge base maintenance

# The Proposed Medical Knowledge Base

- Would be resident on the desktop of every MEPS physician
- Would be organized around diseases and disorders
- Would contain MEPS specific information on qualification rules, diagnostic workup, and other information
- Would link directly to items on the currently used medical history and physical examination forms

# The Proposed MEPS Electronic Medical Record

- Would become the first entry into the service member's CHCS II medical record
- Would contain copies of an applicant's civilian medical records (e.g., surgical records, pathology reports, etc.)
- Would use medical terminology far richer than ICD-9 codes

# Medical Informatics at USMEPCOM

- Would be a contact point for all of USMEPCOM's customers, including accession research agencies
- Would maintain the knowledge base
- Would help accession research agencies apply longitudinal research studies using the medical informatics software

# Schematic View of USMEPCOM Medical Informatics

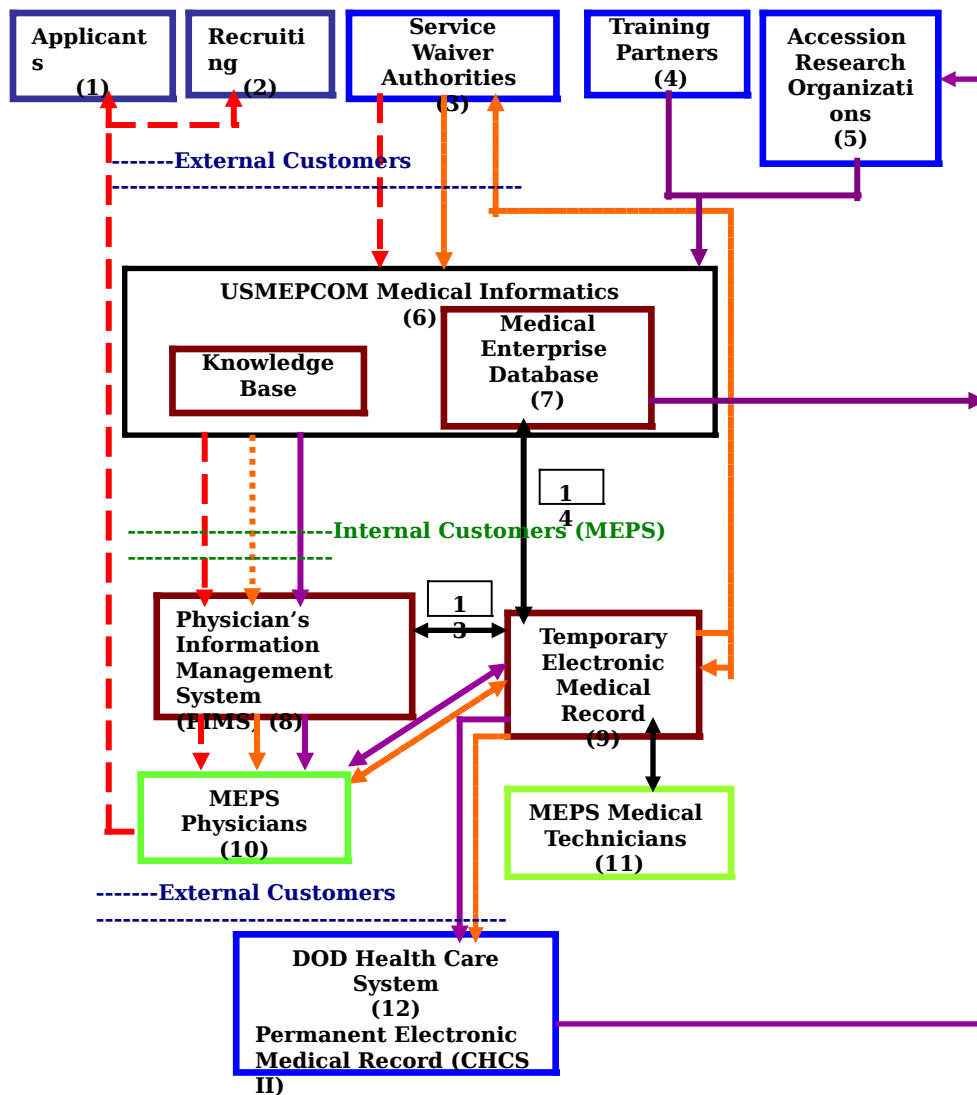


Figure 1 Medical Informatics at USMEPCOM: A Proposal v1-28-03(1700)

# To Build the Software

- Detailed input from USMEPCOM's customers, including accession research, is needed for the design of the software



# An Asthma Example

- Study question: Does a lung test predict attrition in recruits with a history of childhood asthma, but no asthma after age 13,?
- Step 1. Applicant checks yes to the question “Have you ever had or do you now have asthma or any breathing problems related to exercise, weather, pollens, etc”?

# REPORT OF MEDICAL HISTORY

(This information is for official and medically confidential use only and will not be released to unauthorized persons.)

Form Approved  
OMB No. 0704-0413  
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## PRIVACY ACT STATEMENT

**AUTHORITY:** 10 USC 504, 505, 507, 532, 978, 1201, 1202, and 4346; and E.O. 9397.

**PRINCIPAL PURPOSE(S):** To obtain medical data for determination of medical fitness for enlistment, induction, appointment and retention for applicants and members of the Armed Forces. The information will also be used for medical boards and separation of Service members from the Armed Forces.

**ROUTINE USE(S):** None.

**DISCLOSURE:** Voluntary; however, failure by an applicant to provide the information may result in delay or possible rejection of the individual's application to enter the Armed Forces. For an Armed Forces member, failure to provide the information may result in the individual being placed in a non-deployable status.

**WARNING:** The information you have given constitutes an official statement. Federal law provides severe penalties (up to 5 years confinement or a \$10,000 fine or both), to anyone making a false statement. If you are selected for enlistment, commission, or entrance into a commissioning program based on a false statement, you can be tried by military courts-martial or meet an administrative board for discharge and could receive a less than honorable discharge that would affect your future.

1. LAST NAME, FIRST NAME, MIDDLE NAME (SUFFIX) 2. SOCIAL SECURITY NUMBER 3. TODAY'S DATE (YYYYMMDD)

4.a. HOME ADDRESS (Street, Apartment No., City, State, and ZIP Code)

5. EXAMINING LOCATION AND ADDRESS (Include ZIP Code)

b. HOME TELEPHONE (Include Area Code)

## X ALL APPLICABLE BOXES:

### 6.a. SERVICE

☐ Army ☐ Coast Guard  
☐ Navy  
☐ Marine Corps  
☐ Air Force

### b. COMPONENT

☐ Active Duty  
☐ Reserve  
☐ National Guard

### c. PURPOSE OF EXAMINATION

☐ Enlistment  
☐ Commission  
☐ Retention  
☐ Separation

☐ Medical Board ☐ Other (Specify)  
☐ Retirement  
☐ U.S. Service Academy  
☐ ROTC Scholarship Program

7.a. POSITION (Title, Grade, Component)

b. USUAL OCCUPATION

8. CURRENT MEDICATIONS (Prescription and Over-the-counter)

9. ALLERGIES (Including insect bites/stings, foods, medicine or other substance)

Mark each item "YES" or "NO". Every item marked "YES" must be fully explained in Item 29 on Page 2.

## HAVE YOU EVER HAD OR DO YOU NOW HAVE:

YES NO

10.a. Tuberculosis

☐ ☐

b. Lived with someone who had tuberculosis

☐ ☐

c. Coughed up blood

☐ ☐

d. Asthma or any breathing problems related to exercise, weather, pollens, etc.

☐ ☐

e. Shortness of breath

☐ ☐

f. Bronchitis

☐ ☐

g. Wheezing or problems with wheezing

☐ ☐

h. Been prescribed or used an inhaler

☐ ☐

i. A chronic cough or cough at night

☐ ☐

j. Sinusitis

☐ ☐

k. Hay fever

☐ ☐

l. Chronic or frequent colds

☐ ☐

11.a. Severe tooth or gum trouble

☐ ☐

b. Thyroid trouble or goiter

☐ ☐

c. Eye disorder or trouble

☐ ☐

d. Ear, nose, or throat trouble

☐ ☐

e. Loss of vision in either eye

☐ ☐

f. Worn contact lenses or glasses

☐ ☐

g. A hearing loss or wear a hearing aid

☐ ☐

h. Surgery to correct vision (RK, PRK, LASIK, etc.)

☐ ☐

12.a. Painful shoulder, elbow or wrist (e.g. pain, dislocation, etc.)

☐ ☐

b. Arthritis, rheumatism, or bursitis

☐ ☐

c. Recurrent back pain or any back problem

☐ ☐

d. Numbness or tingling

☐ ☐

e. Loss of finger or toe

☐ ☐

## 12. (Continued)

YES NO

f. Foot trouble (e.g., pain, corns, bunions, etc.)

☐ ☐

g. Impaired use of arms, legs, hands, or feet

☐ ☐

h. Swollen or painful joint(s)

☐ ☐

i. Knee trouble (e.g., locking, giving out, pain or ligament injury, etc.)

☐ ☐

j. Any knee or foot surgery including arthroscopy or the use of a scope to any bone or joint

☐ ☐

k. Any need to use corrective devices such as prosthetic devices, knee brace(s), back support(s), lifts or orthotics, etc.

☐ ☐

l. Bone, joint, or other deformity

☐ ☐

m. Plate(s), screw(s), rod(s) or pin(s) in any bone

☐ ☐

n. Broken bone(s) (cracked or fractured)

☐ ☐

13.a. Frequent indigestion or heartburn

☐ ☐

b. Stomach, liver, intestinal trouble, or ulcer

☐ ☐

c. Gall bladder trouble or gallstones

☐ ☐

d. Jaundice or hepatitis (liver disease)

☐ ☐

e. Rupture/hernia

☐ ☐

f. Rectal disease, hemorrhoids or blood from the rectum

☐ ☐

g. Skin diseases (e.g. acne, eczema, psoriasis, etc.)

☐ ☐

h. Frequent or painful urination

☐ ☐

i. High or low blood sugar

☐ ☐

j. Kidney stone or blood in urine

☐ ☐

k. Sugar or protein in urine

☐ ☐

l. Sexually transmitted disease (syphilis, gonorrhea, chlamydia, genital warts, herpes, etc.)

☐ ☐

14.a. Adverse reaction to serum, food, insect stings or medicine

☐ ☐

b. Recent unexplained gain or loss of weight

☐ ☐

c. Currently in good health (If no, explain in Item 29 on Page 2.)

☐ ☐

d. Tumor, growth, cyst, or cancer

☐ ☐

# An Asthma Example, continued

- The system then asks the MEPS physician to obtain answers to questions like the following:
  1. “Were you told by a doctor that you have asthma”?
  2. “Have you had an attack since age 13”?
  3. “Have you used an inhaler since age 13”?
  4. “Have you played on high school athletic teams since age 13, without any breathing problems or inhaler use”?

# An Asthma Example, continued

- Assuming the answers to questions 1-3 is no and 4 is yes, the system determines that the applicant is eligible for the study
- The system then does the following:
  - Consults a random number generator and randomizes the applicant to either a control or experimental group
  - Orders a lung test for the members of the experimental group

# An Asthma Example, continued

- Flags the applicant's record so that it cannot be closed out until the results of the lung test have been entered
- Records pertinent data (applicant's age, sex, ethnicity, etc.) in a database
- Enters the MEPS electronic medical record into CHCS II

# An Asthma Example, continued

- The experimenter now has a control and experimental group that can be followed over time by accessing their CHCS II medical records
- If the information about the service members job can also be accessed, it should be possible to job-specific longitudinal accession research studies

# What is needed now

- A USMEPCOM PAT team is to be formed to develop a technical requirements document for medical informatics
- Representation by members of the accession research communities is needed on this team

